UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte RICHARD D. DETTINGER, FREDERICK A. KULACK,
RICHARD J. STEVENS, and ERIC W. WILL

_____

Appeal 2009-000188
Application 10/618,410[1]
Technology Center 2100

_____

Decided: September 11, 2009

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Before JAMES D. THOMAS, JEAN R. HOMERE, and JOHN A.
JEFFERY, *Administrative Patent Judges*.

HOMERE, *Administrative Patent Judge*.

DECISION ON APPEAL

I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final
rejection of claims 1, 4 through 20, and 23 through 42. Claims 2, 3, 21, and
22 have been cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

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[1] Filed on July 11, 2003. The real party in interest is International Business
Machines Corp.

We affirm.

Brief Summary of the Invention

Appellants invented a method, system, and computer-readable medium for scheduling execution of queries against one or more databases in a data processing system. (Spec. 7-8, Para. [0030].) The queries are scheduled for execution according to query execution schedules. (Spec. 8, Para. [0031].) Each query execution schedule specifies a period of time representing a timeframe in which specific queries can be executed against a particular database. (Spec. 8, Para. [0031].) Further, each query execution schedule specifies query eligibility criteria for identifying the specific queries that can be run within the allotted timeframe. (Spec. 8, Para. [0031].) Therefore, according to Appellants, the query execution schedules provide an efficient workload balancing mechanism. (Spec. 3, Para. [0008].)

Illustrative Claim

Independent claim 1 further illustrates the invention as follows:

1.   A computer-implement method for managing query execution in a data processing system, comprising:

providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system; wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying the specific queries and a timeframe available for executing the specific queries;

receiving a query against the database;

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determining that the received query satisfies at least a portion of the query eligibility criteria of the at least one query execution schedule; and

scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule retrieved from the storage medium.

Prior Art Relied Upon

The Examiner relies on the following prior art as evidence of

unpatentability:

Lomet	US 5,212,788	May 18, 1993
Rubert	US 6,366,915 B1	Apr. 2, 2002
Snodgrass	US 2004/0117359 A1	Jun. 17, 2004
		(filed Mar. 1, 2002)

Rejections on Appeal[2]

The Examiner rejects the claims on appeal as follows:

Claims 1, 4 through 7, 10 through 12, 15 through 17, 20, 23 through 26, 29 through 31, 34 through 36, and 39 through 42 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Snodgrass and Rubert.[3]

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[2] The Examiner withdrew the 35 U.S.C. § 101 rejection of claims 1, 4 through 20, and 23 through 41. (Ans. 24.)
[3] In the listing of claims provided by Appellants in the Appeal Brief, claims 4 and 23 depend from cancelled claims 3 and 22, respectively. For purposes of appeal, we will treat claims 4 and 23 as depending from independent claims 1 and 20, respectively.

Claims 8, 9, 13, 14, 18, 19, 27, 28, 32, 33, 37, and 38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Snodgrass, Rubert, and Lomet.

Appellants' Contentions

1.   Appellants contend that the Examiner erred in concluding that the combination of Snodgrass and Rubert renders independent claim 1 unpatentable. In particular, Appellants argue that:

(a)   Snodgrass' disclosure of a query execution plan for a single query, in conjunction with conventional query optimization, does not teach providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system, wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility identifying the specific queries and a timeframe available for executing the specific queries. (App. Br. 14-16.)

(b)   Rubert's disclosure of a user interface for scheduling a time to execute queries based on user preferences does not teach scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule. (App. Br. 15; 17.)

(c)   There is insufficient rationale for the proffered combination because Rubert's disclosure of allowing a user to schedule query executions teaches away from Snodgrass' disclosure of scheduling queries based on the cost-efficiency of various query execution plans. (App. Br. 17.)

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Examiner's Findings and Conclusions

1.   The Examiner concludes that the combination of Snodgrass and Rubert renders independent claim 1 unpatentable. In particular, the Examiner finds that:

(a)   Snodgrass' disclosure of executing queries according to different execution plans based on various criteria, including the time each query is executed, teaches providing at least one query execution schedule configured to schedule specific queries against a database, wherein the at least one query execution schedule defines query eligibility identifying the specific queries and a timeframe available for executing the specific queries. (Ans. 25-26; 28.)

(b)   Rubert's disclosure of scheduling queries teaches scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule. (Ans. 26-27; 29.)

(c)   Snodgrass' disclosure of predefined execution plans, in conjunction with Rubert's disclosure of scheduling queries based on user authorization, teaches an efficient retrieval of information from one of several databases and provides efficient query execution by automatically performing the query execution and notifying the user of the query results. (App. Br. 29-30.)

II. ISSUES

1.   Have Appellants shown that the Examiner erred in concluding that the combination of Snodgrass and Rubert renders independent claim 1 unpatentable? In particular, the issue turns on whether:

(a)   the proffered combination teaches providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system, wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility identifying the specific queries and a timeframe available for executing the specific queries, as recited in independent claim 1.

(b)   the proffered combination teaches scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule, as recited in independent claim 1.

(c)   there is sufficient rationale for the proffered combination.

III. FINDINGS OF FACT

The following Findings of Fact ("FF") are shown by a preponderance of the evidence.

Snodgrass

1.   Appellants admit that Snodgrass discloses a plurality of queries. (App. Br. 16.)

2.   Snodgrass discloses a database-based application comprising a means for processing temporal queries from a user capable of entering

queries. (Para. [0015].) The database-based application further comprising a means for estimating the cost in processing resources according to each query plan and, a means for selecting, according to criteria, which query plan to be used when processing a query, said criteria being based on the result from said cost calculating means. (Para. [0016].)

      3.   Snodgrass discloses that the database-based application further comprises a means for estimating the cost in processing resources according to each said query plan by estimating the selectivity of a temporal selection. (Para. [0020].) The estimate of the selectivity is intended to be performed by using the information that an end time of a period never precedes a start time of a period. (Para. [0020].)

      4.   Snodgrass discloses that optimization occurs in two phases. (Para. [0028].) Initially, a set of candidate algebraic query plans is produced by means of the optimizer's transformation rules and heuristics. (Para. [0028].) Next, the optimizer considers in more detail each of these plans. (Para. [0028].) For each algebraic operation in a plan, it assumes that each of the algorithms available for computing that operation is being used, and it estimates the consequent cost of computing the query. (Para. [0028].) This way, one best physical query execution plan, where all operation are specified by algorithms, is found for each original candidate plan. (Para. [0028].)

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Rubert

5.   Rubert discloses a system that acts as an intermediary between users and databases, managing user access to the databases so that query specification, query execution, and query result retrieval can occur efficiently and securely. (Abstract.) In particular, the system determines the databases that are accessible to the user, determines the types of database queries which the user is authorized to execute, provides an interface with which the user can easily specify a query, schedules the time for query execution, executes the specified query if necessary and appropriate at the scheduled time, and notifies users of the results of the execution. (Abstract; Col. 3, l. 67 through Col. 4, l. 7.)

IV. PRINCIPLES OF LAW

Obviousness

"On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness." *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998).

> Section 103 forbids issuance of a patent when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains."

KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 406 (2007).

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In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," and discussed circumstances in which a patent might be determined to be obvious. *Id.* at 415 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 12 (1966)). The Court reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. The Court explained:

> When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

Id. at 417.

The operative question in this "functional approach" is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.* at 415, 417.

In identifying a reason that would have prompted a person of ordinary skill in the relevant field to combine the prior art teachings, the Examiner must show some articulated reasoning with some rational underpinning to

support the legal conclusion of obviousness. *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Teaching Away

"What the prior art teaches and whether it teaches toward or away from the claimed invention . . . is a determination of fact." *Para-Ordnance Mfg., Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1088 (Fed. Cir. 1995). "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). Teaching an alternative or equivalent method, however, does not teach away from the use of a claimed method. *In re Dunn*, 349 F.2d 433, 438 (CCPA 1965).

V. ANALYSIS

Claim 1

Independent claim 1 recites, in relevant parts:

> 1) providing at least one query execution schedule configured to schedule specific queries against a database in the data processing system; 2) wherein the at least one query execution schedule is stored in a storage medium and defines query eligibility criteria identifying the specific queries and a timeframe available for executing the specific queries; and 3) scheduling a time to execute the received query on the basis of

the timeframe of at least one query execution schedule retrieved
from the storage medium.

As detailed in the Findings of Fact section above, Snodgrass discloses
a set of candidate algebraic query plans produced by an optimizer's
transformation rules and heuristics. (FF 4.) In particular, each algebraic
operation in a plan estimates the cost of computing a query, thereby
selecting the best physical query execution plan for the respective query.
(*Id.*) Further, Appellants admit that Snodgrass discloses a plurality of
queries. (FF 1.) We find that Snodgrass' disclosure teaches selecting query
plans for executing multiple queries. Additionally, Rubert discloses a
system that schedules a time for query execution and executes the specified
query at the scheduled time. (FF 5.) We find that Rubert's disclosure
teaches scheduling a query for execution and executing the query according
to the scheduled time. In summary, we find that Snodgrass' disclosure of
selecting query plans for executing multiple queries, in conjunction with
Rubert's disclosure of scheduling a query for execution and executing the
query according to the scheduled time, teaches providing at least one query
execution schedule configured to schedule specific queries against a
database in the data processing system, as recited in independent claim 1.
Therefore, we are not persuaded by Appellants' argument that Snodgrass'
disclosure fails to teach that the execution plan provides a schedule for more
than one query. (App. Br. 15.)

Further, Snodgrass discloses selecting a query plan using criteria based on the result of cost calculations. (FF 2.) In particular, Snodgrass discloses estimating the cost calculations according to a temporal selection based on information that an end time period never precedes a start time period. (FF 3.) We find that Snodgrass' disclosure teaches selecting a cost-effective query execution plan based on criteria and a time period for execution. As set forth above, we find that Rubert's disclosure teaches scheduling a query for execution and executing the query according to the scheduled time. In summary, we find that Snodgrass' disclosure of selecting a cost-effective query execution plan based on criteria and a time period for execution, in conjunction with Rubert's disclosure of scheduling a query for execution and executing the query according to the scheduled time, teaches wherein the at least one query execution schedule defines query eligibility criteria identifying the specific queries and a timeframe available for executing the specific queries, as recited in independent claim 1.

We are not persuaded by Appellants' argument that Snodgrass' disclosure of criteria fails to teach criteria that identify a specific query. (App. Br. 16.) "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *See KSR*, 550 U.S. at 417. In this case, we find that an ordinarily skilled artisan would recognize that utilizing criteria to select a query execution plan would predictably allow

utilizing similar criteria to identify a plurality of queries for scheduled execution.

Additionally, as set forth above, we find that Rubert's disclosure teaches scheduling a query for execution and executing the query according to the scheduled time. In particular, we find that Rubert's disclosure of scheduling a query for execution and executing the query according to the scheduled time amounts to scheduling a time to execute the received query on the basis of the timeframe of at least one query execution schedule, as recited in independent claim 1.

Rationale to Combine

As set forth above, we find that Snodgrass' disclosure teaches selecting query plans for executing multiple queries, whereby a cost-effective query execution plan is selected based on criteria and a time period for execution. Further, Rubert's disclosure complements Snodgrass by scheduling a query for execution and executing the query according to the scheduled time. Thus, we find that Snodgrass and Rubert disclose prior art elements that perform their ordinary functions to predictably result in a method, system, and computer-readable medium for scheduling execution of queries against one or more databases utilizing specific query eligibility criteria for identifying the specific queries that can be run within an allotted timeframe. *See KSR*, 550 U.S. at 418-19.

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Further, Appellants argue that Rubert's disclosure of allowing a user
to schedule when a query executes teaches away from Snodgrass' disclosure
of scheduling queries based on the cost-efficiency of various query
execution plans. (App. Br. 17.) We do not agree. As set forth above, we
find that Rubert discloses scheduling a query for execution and executing the
query according to the scheduled time. Appellants have shown nothing in
Snodgrass that would have discouraged an ordinarily skilled artisan from
preventing a potential user of Rubert's system from scheduling when a query
executes. Appellants have not pointed to an explicit disclosure within
Snodgrass stating that potential users are prevented from scheduling when a
query executes. Instead, Snodgrass' disclosure of selecting a cost-effective
query plan based on criteria and a time period for execution is an alternative
or equivalent teaching to allowing a user to schedule when a query executes.
(App. Br. 8.) Therefore, Appellants have not shown that Snodgrass'
disclosure of selecting a cost-effective query plan based on criteria and a
time period for execution teaches away from Rubert's disclosure of allowing
a user to schedule when a query executes. Appellants' argument that the
Examiner has not provided sufficient rationale to warrant the proffered
combination is unavailing. It follows that Appellants have failed to show
that the Examiner erred in concluding the combination of Snodgrass and
Rubert renders independent claim 1 unpatentable.

*Claims 4 through 7, 10 through 12, 15 through 17, 20, 23 through 26, 29
through 31, 34 through 36, and 39 through 42*

Appellants do not provide separate arguments with respect to claims 4
through 7, 10 through 12, 15 through 17, 20, 23 through 26, 29 through 31,
34 through 36, and 39 through 42. Therefore, we select claim 1 as being
representative of the cited claims. Consequently, Appellants have not shown
error in the Examiner's rejection of claims 4 through 7, 10 through 12, 15
through 17, 20, 23 through 26, 29 through 31, 34 through 36, and 39 through
42 for the reasons set forth in our discussion of claim 1 above. 37 C.F.R.
§ 41.37(c)(1)(vii).

Claims 8, 9, 13, 14, 18, 19, 27, 28, 32, 33, 37, and 38

Appellants submit that since the combination of Snodgrass and Rubert
does not teach the claim limitations of independent claims 7, 15, 26, and 34,
the combination of Snodgrass, Rubert, and Lomet does not render dependent
claims 8, 9, 13, 14, 18, 19, 27, 28, 32, 33, 37, and 38 unpatentable. (App.
Br. 19-20.) As discussed above, we have found no such deficiencies in the
Snodgrass and Rubert combination for Lomet to cure. It follows that
Appellants have not shown that the Examiner erred in concluding that the
combination of Snodgrass, Rubert, and Lomet renders dependent claims 8,
9, 13, 14, 18, 19, 27, 28, 32, 33, 37, and 38 unpatentable.

VI. CONCLUSIONS OF LAW

Appellants have not shown that the Examiner erred in concluding that:

1.   the combination of Snodgrass and Rubert renders claims 1, 4 through 7, 10 through 12, 15 through 17, 20, 23 through 26, 29 through 31, 34 through 36, and 39 through 42 unpatentable under 35 U.S.C. § 103(a).

2.   the combination of Snodgrass, Rubert, and Lomet renders claims 8, 9, 13, 14, 18, 19, 27, 28, 32, 33, 37, and 38 unpatentable under 35 U.S.C. § 103(a).

VII. DECISION

We affirm the Examiner's decision to reject claims 1, 4 through 20, and 23 through 42 under 35 U.S.C. § 103(a).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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